

India's International Cooperation in Space



**Presentation by Indian delegation
to
58th session of STSC - UNCOPUOS
Vienna, Austria**

April 28, 2021

International Cooperation in shaping Indian space Programme

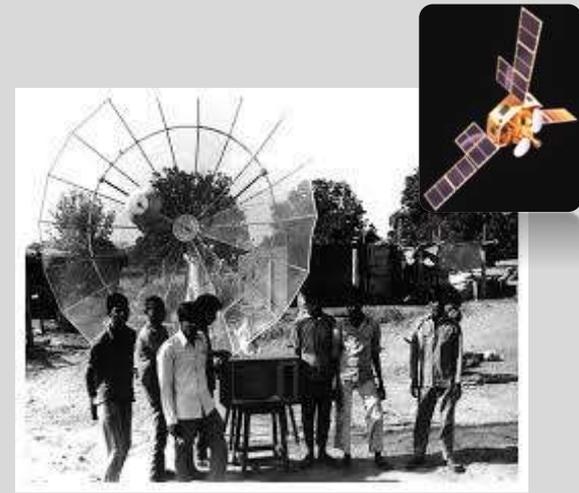
Setting up of TERLS (1962) USSR-USA-France



SITE (1975-76) USA's Advanced Technology Satellite-6



STEP (1977-79) Franco - German Symphonie



1st Sounding rocket from India USA, USSR, W. Germany, UK & Japan



Nov 21,
1963

Remote Sensing Experiments

ATS-6
(USA) USSR - USA

Coconut Root Wilt Disease Experiment



1971

BRIDE



Balloon experiment

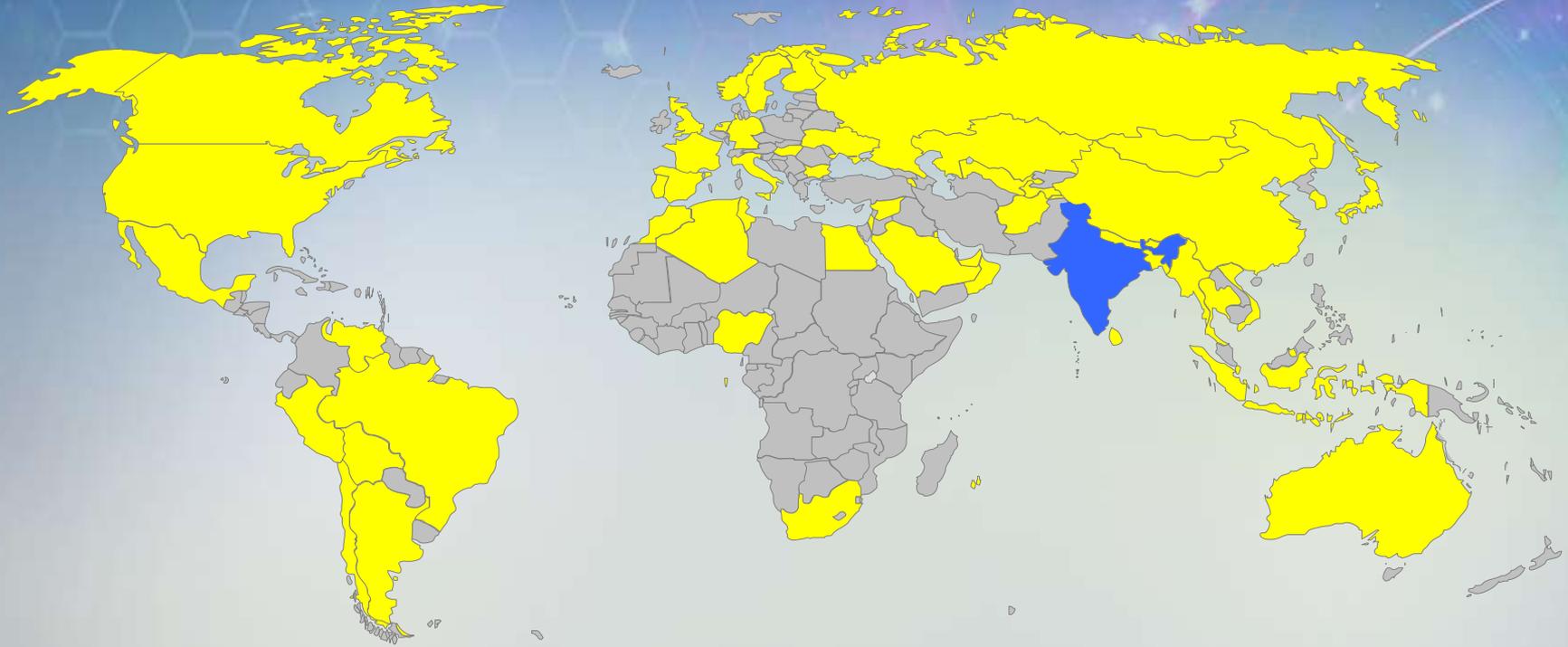
1975

ARISE



1978

ISRO's International cooperation – the spread



Areas:RS, Satcom, SatNav, TTC, exploration, space law & capacity building

About 250 Agreements with 59 countries & 5 MN bodies

Countries: Afghanistan, Algeria, Argentina, Armenia, Australia, Bahrain, Bangladesh, Bhutan, Bolivia, Brazil, Brunei, Bulgaria, Canada, Chile, China, Egypt, Finland, France, Germany, Hungary, Indonesia, Israel, Italy, Japan, Kazakhstan, Kuwait, Maldives, Mauritius, Mexico, Mongolia, Morocco, Myanmar, Nepal, Nigeria, Norway, Oman, Peru, Portugal, Russia, Sao Tome & Principe, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sri Lanka, Sweden, Syria, Tajikistan, Thailand, The Netherlands, Tunisia, UAE, Ukraine, UK, USA, Uzbekistan, Venezuela & Viet Nam.

Multi-national bodies: EC, ESA, ECMWF, SAARC & EUMETSAT

ISRO's International Space Cooperation- Domains

- Realisation of joint satellite missions (MEGHA-TROPIQUES, SARAL, NISAR, TRISHNA)
- Accommodation of payloads (CHANDRAYAAN-1, OCEANSAT-2 & ASTROSAT)
- Telemetry, Tracking & Command (TTC) stations at Brunei, Indonesia & Mauritius
- Disaster management (International Charter, Sentinel Asia, UNSPIDER, Search & Rescue)
- Capacity building (CSSTEAP, UNNATI)
- Participation in Advisory Committees on Policy Regulations



Cooperative Documents concluded in last One year

Apr 2020: Plan of cooperation with **Israel** Space Agency regarding cooperation in electric propulsion for small satellite

Aug 2020: MoU with **Nigeria** on cooperation in the exploration and uses of outer space for peaceful purposes

Oct 2020: Specific cooperation agreement with **Mexican** Space Agency on forest fire management using EO data and capacity building

Nov 2020: MoU with Kyoto University, **Japan** MOU for academic and research cooperation and exchange

Nov 2020: MoU with **Bhutan** on cooperation in the peaceful uses of outer space

Major Updates (March 2020 – March 2021)

Japan

completed the feasibility study for a joint lunar polar exploration mission and are currently finalizing the Phase-A study report. Finalized the details of establishing ISRO's NavIC reference station in Japan

France

Feasibility study for the ISRO – CNES joint Thermal Infrared mission completed. Interface details for accommodating CNES ARGOS payload in ISRO Oceansat-3 has been finalized. Also finalized the cooperation in space medicine related to Indian human space flight program

Russia

The Indian Astronaut trainee candidates were deputed to GCTC, Russia for spaceflight training. They have successfully completed the training. Discussions are progressing in other areas like crew seat, space suit, life support system elements etc.

USA

The NASA – ISRO Synthetic Aperture Radar Satellite has seen significant progress. An Airborne campaign was conducted in US using Indian SAR. ISRO built L-Band SAR delivered to JPL, NASA during March 2021

Major Updates (March 2020 – March 2021)

Australia

Discussion on establishing a Transportable TTC Terminal for the Gaganyaan mission with Australian Space Agency

Bhutan

Discussion on to realise joint satellite with Bhutan

ESA

Finalizing ground station cross support with ESA

Israel

Exchange required technical details on cooperation in Electric Propulsion System with Israel Space Agency.

Mexico

Discussion on cooperate in the area of capacity building in forest fire management using earth observation data with Mexican Space Agency

International Events

As the Chair, ISRO organised the 34th Plenary of Committee on Earth Observation Satellites (CEOS) virtually during October 18-20, 2020.

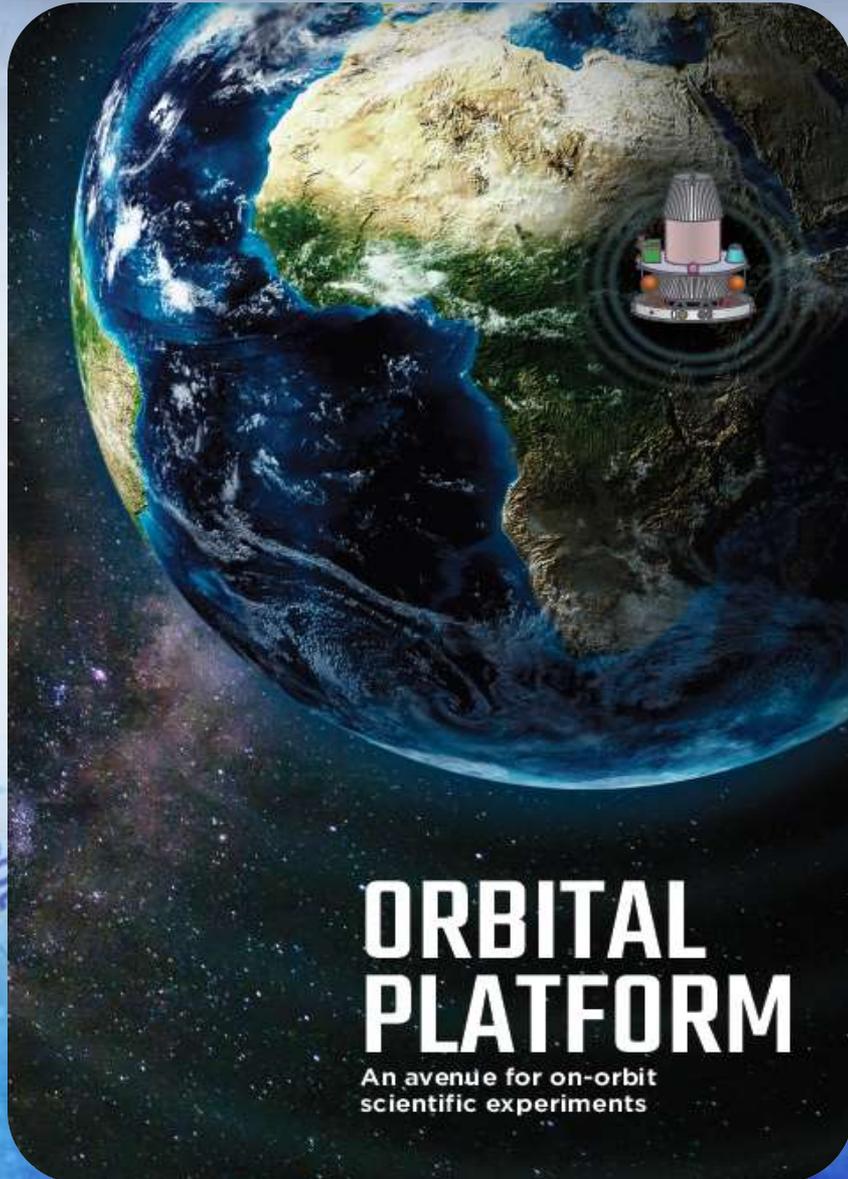
About 130 officials from 62 member agencies and associated organisations have participated.



North Eastern Space Applications Centre (NESAC) has organised a 2-week training on Earth Observations Applications for the BIMSTEC officials during January 4-17, 2020



Experimental Opportunity



Platform for Microgravity Experiments

0-g experiments

Technology demonstration
experiments

Biological experiments

Student payloads

De-orbit & re-entry for Debris
Management



Thanks

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cooperation
international

